WHAT IS CLAIMED IS:

1. A method for obtaining seismic data comprising the steps of:

(a) translating a constellation of seismic energy sources along a survey path, the seismic energy sources including a reference energy source and at least one satellite energy source;

(b) activating the reference energy source and the at least one satellite energy source at a time delay relative to the activation of the reference energy source once each at spaced apart activation locations along the survey path to generate a series of superposed wavefields which propagate through a subsurface and are reflected from and refracted through material heterogeneities in the subsurface, the time delay being varied between the spaced apart activation locations; and

(c) recording seismic data including seismic traces generated by the series of superposed wavefields utilizing spaced apart receivers.

2. The method of claim 1 further comprising:

processing the seismic data using the time delays to separate signals generated from the respective energy sources.

3. The method of claim 2 wherein:

the step of recording seismic data includes recording amplitudes of the superposed wavefields, the location of the receivers, the locations of the energy sources, and the time delays between the activations of the reference energy source and the at least one satellite energy source.

4. The method of claim 2 wherein:

processing the seismic data further includes sorting into a common-geometry domain and replicating the seismic traces of data into multiple datasets associated with each particular energy source;

time adjusting each trace in each replicated dataset in the common-geometry domain using the time delays associated with each particular source to make signals generated from that particular energy source generally coherent while rendering signals from the other energy sources generally incoherent.

5. The method of claim 4 wherein:

the common-geometry domain is one of common-midpoint, common-offset, common-receiver and common-azimuth.

6. The method of claim 4 further comprising:

attenuating the incoherent signals from the datasets of coherent signal and incoherent signal associated with the respective energy sources to produce enhanced data sets associated with the respective energy sources.

7. The method of claim 6 wherein:

the attenuation step includes using at least one of Radon filtering, FX filtering, dynamic noise attenuation, stacking, and migration.

8. The method of claim 6 wherein:

the step of attenuation includes using dynamic noise attenuation wherein the relative amplitudes of the coherent signals from each of the respective energy sources are preserved.

9. The method of claim 1 wherein:

the at least one satellite energy source includes a plurality of energy sources, and time delays are variable between each of the plurality of energy sources in the constellation at each of the activation locations.

10. The method of claim 1 wherein:

the time delay includes a constant portion t_c which remains constant for any particular source for the duration of the seismic survey and a variable portion t_v, which varies for each source and for each activation location.

11. The method of claim 10 wherein:

the constant portion t_c is different for each satellite source.

12. The method of claim 1 wherein:

the receivers are disposed generally in a linear alignment along a predetermined length.

13. The method of claim 12 wherein:

an elongate streamer includes a cable and the receivers and the streamer is towed by a marine vessel.

14. The method of claim 13 wherein:

the reference energy source and the at least one satellite energy source is generally collinear with the streamer.

15. The method of claim 13 wherein:

at least one of the energy sources is located laterally outboard from the linear alignment of receivers a distance of at least one-tenth of the length of the receiver cable.

16. The method of claim 13 wherein:

the energy source located farthest upstream from the streamer is located at least one half the length of streamer upstream from the streamer.

17. The method of claim 13 wherein:

the energy source located farthest downstream from the streamer is located at least one half the length of streamer downstream from the streamer.

18. The method of claim 1 wherein:

the receivers are fixed relative to the earth.

19. The method of claim 1 wherein:

an elongated cable of receivers resides inside a well bore.

20. The method of claim 1 wherein:

the variable time delays range from plus to minus one-half the time interval between successive activation locations.